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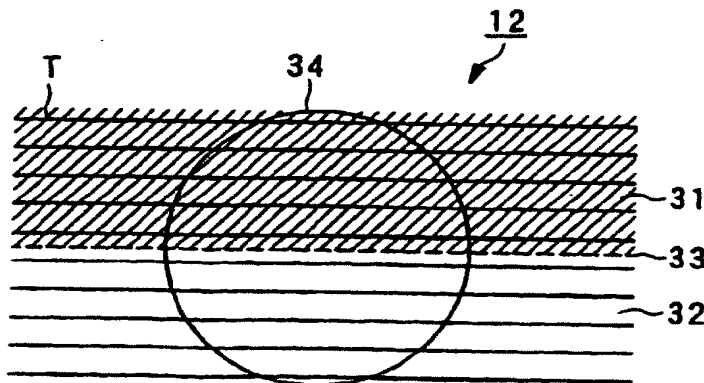
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(54) Information recording apparatus

(57) An information recording apparatus capable of detecting an accurate tracking error even if a reflectance or a transmittance of respective information recording layers varies when information is recorded onto a multilayer optical information recording medium having a plurality of information recording layers, wherein the apparatus comprises a detecting device for detecting a position of a boundary portion (33) between a recorded ar-

ea (31) where the information has already been recorded and an unrecorded area (32) in the information recording layer; an inhibiting device for inhibiting recording the information onto an area in one information recording layer in a case where the boundary portion in an information recording layer may affect a tracking servo for recording the information onto said one information recording layer.

FIG. 3 B



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EUROPEAN SEARCH REPORT

Application Number
EP 02 25 0857

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	EP 0 957 477 A (MATSUSHITA ELECTRIC IND CO LTD) 17 November 1999 (1999-11-17)	1	G11B7/09
A	* abstract *	2	G11B7/0045
	* paragraph [0001] - paragraph [0008] *		
	* paragraph [0060] - paragraph [0064] *		
	* figures 5,6 *		
X	JP 2000 293947 A (MATSUSHITA ELECTRIC IND CO LTD) 20 October 2000 (2000-10-20)	1	
A	* abstract *	2	
	* paragraph [0001] - paragraph [0011] *		
	* paragraph [0034] - paragraph [0068] *		
	* paragraph [0084] - paragraph [0102] *		
	* figures 1,2,6,8,10 *		
X	JP 2000 285469 A (TOSHIBA CORP) 13 October 2000 (2000-10-13)	3,5	
A	* abstract *	1	
	* paragraph [0001] - paragraph [0008] *		
	* paragraph [0011] - paragraph [0028];		
	figure 3 *		
X	US 5 414 451 A (MATSUMOTO KIYOSHI ET AL) 9 May 1995 (1995-05-09)	3-5	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
	* column 20, line 14 - column 22, line 18 *		G11B
X	JP 2001 023170 A (HITACHI LTD) 26 January 2001 (2001-01-26)	3,4	
A	* abstract *	1,2,5	
	* paragraph [0001] - paragraph [0006] *		
	* paragraph [0009] - paragraph [0023] *		
	* figure 3 *		
X	WO 00/28532 A (KONINKL PHILIPS ELECTRONICS NV) 18 May 2000 (2000-05-18)	3-5	
	* the whole document *		
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		12 November 2004	Skaropoulos, N
CATEGORY OF CITED DOCUMENTS			
<p>X: particularly relevant if taken alone</p> <p>Y: particularly relevant if combined with another document of the same category</p> <p>A: technological background</p> <p>O: non-written disclosure</p> <p>P: intermediate document</p> <p>T: theory or principle underlying the invention</p> <p>E: earlier patent document, but published on, or after the filing date</p> <p>D: document cited in the application</p> <p>L: document cited for other reasons</p> <p>&: member of the same patent family, corresponding document</p>			

EPO FORM 1503 (3-82) (F04C01)



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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LACK OF UNITY OF INVENTION
SHEET B

Application Number
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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1,2

Apparatus for recording information on a multiply layered optical disk characterized in that it contains device for inhibiting recording on areas of an information layer where the boundary portion of any of the other recording layers may affect the recording operation.

2. claims: 3-5

Apparatus for recording information on a multiply layered optical disk characterized in that it contains device for controlling the order by which the information layers are recorded.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 02 25 0857

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

12-11-2004

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0957477	A	17-11-1999	CN 1236156 A ,B	24-11-1999
			EP 0957477 A2	17-11-1999
			JP 3250989 B2	28-01-2002
			JP 2000036130 A	02-02-2000
			JP 2001273674 A	05-10-2001
			TW 448435 B	01-08-2001
			US 6456584 B1	24-09-2002
JP 2000293947	A	20-10-2000	NONE	
JP 2000285469	A	13-10-2000	NONE	
US 5414451	A	09-05-1995	JP 3266627 B2	18-03-2002
			JP 5101398 A	23-04-1993
			US 5614938 A	25-03-1997
JP 2001023170	A	26-01-2001	NONE	
WO 0028532	A	18-05-2000	BR 9906801 A	10-10-2000
			CN 1292915 T	25-04-2001
			WO 0028532 A1	18-05-2000
			EP 1046159 A1	25-10-2000
			JP 2002529881 T	10-09-2002
			TW 479241 B	11-03-2002
			US 2003123368 A1	03-07-2003
			US 6552985 B1	22-04-2003
			US 2004156295 A1	12-08-2004

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82